



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/682,236	10/09/2003	Yoshihiro Kawano	16121	1021
23389	7590	09/06/2005	EXAMINER	
SCULLY SCOTT MURPHY & PRESSER, PC 400 GARDEN CITY PLAZA SUITE 300 GARDEN CITY, NY 11530			WILLIAMS, DON J	
			ART UNIT	PAPER NUMBER
			2878	

DATE MAILED: 09/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/682,236

Applicant(s)

KAWANO ET AL.

Examiner

Don Williams

Art Unit

2878

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Claim Objections***

Claim 5, line 2 is objected to because of the following informalities: It appears that "than" should be "that" can impart a confocal effect to light from the sample body. Appropriate correction is required.

Claim 13, line 5 is objected to because of the following informalities: Is "f lens" an f-theta lens? For examining purpose, the "f lens" will be treated as an "f theta" lens. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 3 and 4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As to claim 3, it is unclear whether this is a situation where the laser is "one of" a laser and white light source or both a laser and white light source? If so, no support is provided in the specification or drawings. If not so, "for which one"? For examining purpose, the laser will be treated as a laser or white light source. Appropriate correction is required.

Claim 4 is inherently rejected due to dependency.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35

U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 6, 9-16, 21, and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by MacAulay et al (6,663,560).

As to claim 1, MacAulay et al disclose an illumination light source (4), a (lens) (see fig. 3) for altering the cross-sectional shape ratio of a beam of light emitted from the light source (4); one (lens) (fig. 3) for converging beams of light of different cross-sectional shape ratio to create a linear light; a first light modulation member (8) for imparting shade to the converged linear light; one lens (40) forming the light to which the shade has been imparted as a parallel light; one scanning member (38) for altering the angle of the illumination; one (12) for focusing the light to which the shade has been imparted; an objective lens (20) for projecting the light to which the shading has been imparted to a sample body (22); and one (lens) for imaging the reflected light from the sample body (22) or the light generated by the sample body (22) on a light detecting element (32), (column 10, lines 53-67, column 11, lines 1- 13, column 15, lines 22-59, fig. 3, column 3, lines 60-67, column 16, lines 1-37).

As to claim 2, MacAulay et al disclose light detecting element (32) as an imaging device, (see column 9, lines 28-35, fig. 1, column 16, lines 29-33).

As to claim 3, MacAulay et al disclose that the light source maybe that of a laser or a white light source (see column 9, lines 50-54).

As to claim 6, MacAulay et al disclose a (computer) for controlling the speed regulation of the scanning mirror (38); the illumination pattern of the spatial light modulator (8), and the ON/OFF irradiation of the illumination light on the sample body (22), (see column 3, lines 51, column 4, line 3.)

As to claim 9, MacAulay et al disclose spatial light modulator (8), (see fig. 3, column 15, lines 60-67).

As to claim 10, MacAulay disclose scanning galvanometer mirror (38) and a single point illumination light can be shifted by controlling the spatial light modulator (8) with alterable shade patterns, (see fig. 3, column 15, lines 60-64).

As to claim 11, MacAulay et al disclose light modulation member (8) imparts various alterable shade patterns where a confocal image is produced by plurality of points (plurality of spots) and the sample body (22) can be simultaneously illuminated, (see column 1, lines 19-30, column 3, 1-43, column 8, lines 12-39, column 5, 48-67).

As to claim 12, MacAulay et al disclose light modulation member (8) is capable of altering a shade, one segment of the visual field is simultaneously illuminated and the sample body (22) is scanned with a linear light, (see column 1, lines 19-30, column 8, lines 12-39, column 5, lines 48-67).

As to claim 13, MacAulay et al disclose one of one or more cylindrical lens and or f-theta lens, (see fig. 3).

As to claim 14, MacAulay et al disclose galvanometer mirror (38), (see fig. 3, column 15, lines 60-67).

As to claim 15, MacAulay et al disclose sample body (22) is scanned several times by linear illumination lights (8) of different shade patterns and one image is produced from the plurality of scanned patterns, (see column 1, lines 20-51, column 10, lines 53-67).

As to claim 16, MacAulay et al disclose a laser (4) and a laser beam from the laser (4) is introduce into the lens (16) and (18) through a fiber (14), (see fig. 1, column 10, lines 53-67).

As to claim 21, MacAulay et al disclose a two-dimensional imaging device (CCD), (see column 9, lines 25-36, column 16, lines 29-30).

As to claim 25, MacAulay et al disclose lens system (20) for focusing a plurality of different wavelengths on the light detecting element (32), (see fig. 1, column 8, lines 40-50).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4, 22, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over MacAulay et al, (6,663,560).

As to claim 4, MacAulay et al disclose white light source or laser. MacAulay et al fail to disclose the exact light sources claimed. It would have been obvious for one ordinary skill in the art to replace the white light source or laser of MacAulay with any selected from the claimed group since they are functionally equivalent, (see column 9, lines 50-55, column 21, lines 10-16).

As to claim 22, MacAulay et al disclose (CCD) charge couple device camera. MacAulay et al fail to disclose the exact CCD camera claimed. It would have been obvious for one ordinary skill in the art to replace the CCD camera of MacAulay with any selected from the claimed group since they are functionally equivalent, (see fig. 1, column 7, lines 4-42).

As to claim 23, MacAulay et al disclose light detection element (32). MacAulay et al fail to disclose the exact line sensor claimed. It would have been obvious for one ordinary skill in the art to replace the light detection element of MacAulay with the claimed line sensor since it is functionally equivalent, (see column 9, lines 23-40).

Claims 5, 7, 8, 19, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over MacAulay et al in view of Jovin et al (6,128,077).

As to claim 5, MacAulay et al fail to disclose a second light modulation. Jovin et al disclose a scanning microscope that uses a second spatial light modulator (620). It would have been obvious for one ordinary skill in the art to modify MacAulay et al to include a second spatial light modulator as disclosed by Jovin et al to optimize and improve the confocal illumination pattern from the sample, (see fig. 6, column 10, lines 43-58).

As to claim 7, MacAulay et al disclose digital mirror device (8), lens (40), and optical member (6). MacAulay et al fail to disclose a diffraction grating. Jovin et al disclose a grating (G1), holographic gratings, prisms and acousto-optical tunable filters. It would have been obvious for one ordinary skill in the art to modify MacAulay et al to include any selected from the group as disclosed by Jovin et al since they are functionally equivalent to acquire a precise light spot on the sample when being scanned, (see fig. 3, column 8, lines 65-67, column 9, lines 1-3, column 10, 1-18).

As to claim 8, MacAulay et al disclose that the spatial light modulator is a one dimensional mirror array. MacAulay et al fail to disclose MEMS (Micro Electro Mechanical System) mirrors as the spatial light modulators. Jovin et al disclose a spatial light modulator may be a liquid crystal or micromechanical switch. It would have been obvious for one ordinary skill in the art to modify MacAulay et al to include liquid crystals



Art Unit: 2878

or micromechanical switches (DMD) of Jovin et al in order to improve the illumination of the sample image, (see column 5, lines 25-44).

As to claim 19, MacAulay et al disclose a photo detector (32), sample body (22), and modulation member (8), (see fig. 1, column 10, lines 53-67). MacAulay et al fail to disclose spectral diffraction device, acousto-optic modulator, and prism. Jovin et al disclose grating (G1), and prism. It would have been obvious for one ordinary skill in the art to modify MacAulay to include grating (G1) and (prism) as disclosed by Jovin et al to increase optical efficiency to acquire a precise light spot on the sample when being scanned, (see fig. 3, column 8, lines 65-67, column 9, lines 1-67, column 10, 1-42).

As to claim 24, MacAulay et al disclose PMT (photomultiplier). MacAulay et al fail to disclose the exact PMT array claimed. It would have been obvious for one ordinary skill in the art to replace the PMT element of MacAulay with any selected from the claimed group since they are functionally equivalent (see column 9, lines 23-40).

Claim 17, 18, 20 rejected under 35 U.S.C. 103(a) as being unpatentable over MacAulay et al in view of Sun et al.

As to claim 17, MacAulay et al disclose fluorescent and sample body (22), (column 8, lines 40-56). MacAulay et al fail to disclose the use of an ultra short pulse laser, and multi-photon excitation. Sun et al disclose ultra short pulse laser and multi-photon excitation. It would have been obvious for one ordinary skill in the art to include ultra short pulse laser and multi-photon excitation to illuminate the sample to obtain a clear and precise image, (see column 1, lines 11-65, fig. 1, column 3, lines 1-50).

Art Unit: 2878

As to claim 18, MacAulay et al fail to disclose a titanium sapphire laser. Sun et al disclose titanium sapphire laser. It would have been obvious for one ordinary skill in the art to include titanium sapphire laser as disclosed by Sun et al to excite the sample (20) to obtain a clear optical image, (see column 1, lines 11-65, fig. 1, column 3, lines 1-65).

As to claim 20, MacAulay et al disclose Raman spectrum, (column 1, lines 20-30, column 8, lines 40-50). MacAulay et al fail to disclose secondary harmonic generation and third harmonic generation. Sun et al disclose secondary harmonic wave component (162) and third harmonic wave component (163). It would have been obvious for one ordinary skill in the art to include secondary harmonic generation (162) and third harmonic generation (163) as disclosed by Sun et al to extract fluorescent light and improve the image of the sample (20), (see fig. 1, column 3, lines 1-65, column 4, lines 1-65).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Don Williams whose telephone number is 571-272-8538. The examiner can normally be reached on 8:30a.m. to 5:30a.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Porta can be reached on 571-272-2444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2878

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Don Williams  
Patent Examiner  
Art Unit 2878  
Ph: 571-272-2878



DAVID PORTA  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800